EPA Monitoring Priorities and the Surveys of the Nation's Waters

National Forum for Planning the
2008 Survey of Rivers

January 10, 2007

Critiques* of Water Monitoring Programs

- States and Tribes do not have all data needed to make decisions
  - Set water quality standards
  - Develop watershed plans and TMDLs
  - Evaluate effectiveness of programs
- Data inadequate for scientifically-valid characterization of water quality condition regionally or across U.S.

*GAO, National Academy of Science, National Academy of Public Administration, and other reports

Monitoring Initiative Priorities

- Build and enhance State, Tribal and Interstate capacity for monitoring
- Expand access to and use of data
- Collaborate on statistical surveys to track condition of the nation's waters

Actions to Build State and Tribal Capacity

- Provide guidance, tools and training in design, indicators, data management and priority setting
- Use 106 Monitoring Initiative grants to address state priorities in building monitoring programs
- Support demonstrations/pilots on effective integrated monitoring designs to support CWA programs
- Promote collaboration and information exchange
  - NWQMC, volunteer monitoring, national survey meetings
- Work with tribes to implement the Tribal 106 Grant Guidance
- Seek opportunities to leverage national surveys

Actions to Improve Access to and Use of Data

- Develop Water Quality Exchange (WQX) for easier data sharing
  - Data migration from existing systems
  - Web-based interface for small data providers
  - High-speed warehousing for quick downloads
  - Web-based data navigation and analysis tools
- Support electronic reporting of integrated water quality assessments
  - Integrate site-specific and survey-based assessments
  - Track both assessment results and administrative actions
- Provide provide geospatial tools to support program integration

Actions to Track the Condition of the Nation's Waters

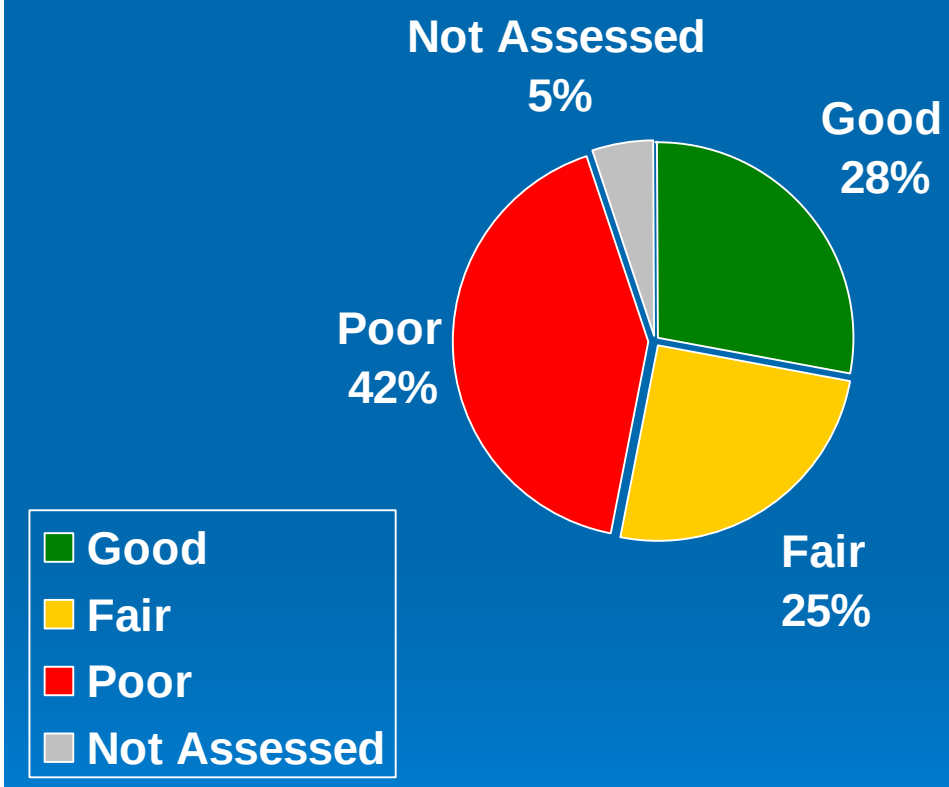
- Implement national surveys
  - Assess all waters using statistically-valid surveys
  - Report on status and trends in streams, lakes, rivers, coastal waters, & wetlands
  - Evaluate effectiveness of water resource protection and restoration
- Seek uses of survey data to support water resource protection and restoration
  - Develop water quality standards and criteria
  - Prioritize stressors and follow up analyses
- Integrate data and information to build landscape/predictive tools
  - Prioritize monitoring activities among impaired, high quality and vulnerable waters
  - Set priorities for protection and restoration activities

National Water Resource Survey Schedule

	FY07	FY08	FY09	FY10	FY11	FY12	FY13
Lakes	Field	Lab, data	Report	Research	Design	Field	Lab, data
Rivers	Design	Field	Lab, data	Report*	Research	Design	Field
Streams	Research	Design	Field	Lab, data	Report	Research	Design
Coastal	Report	Research	Design	Field	Lab, data	Report	Research
Wetlands	Research	Research	Research	Design	Field	Lab,data	Report

*The rivers and streams results will be combined into one report issued in 2011, that covers condition of both rivers and streams and changes in stream condition since the baseline report that was finalized in 2006.

Wadeable Streams Assessment - Key Findings

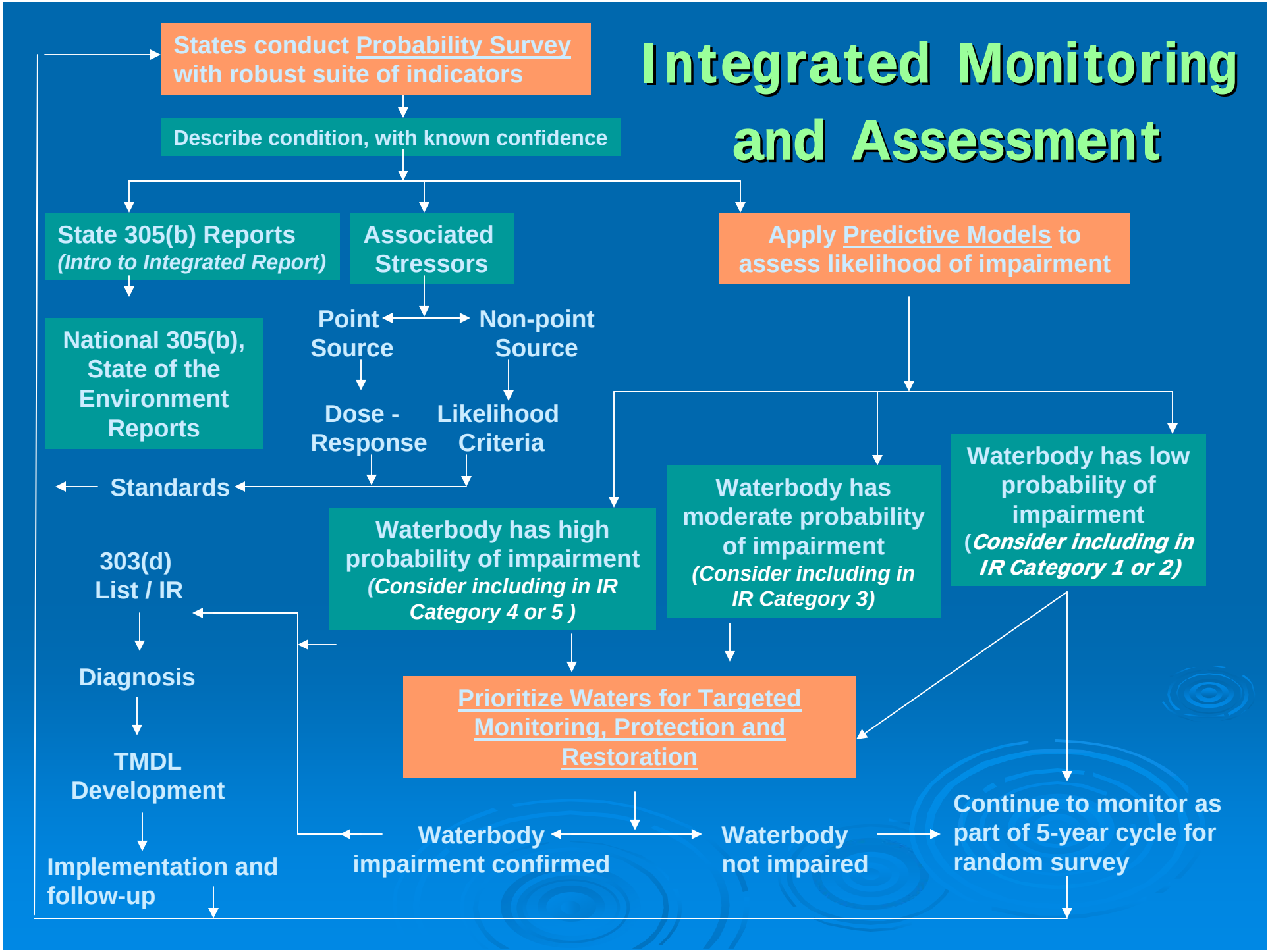


Biological Condition of Streams (Index of Biotic Condition)

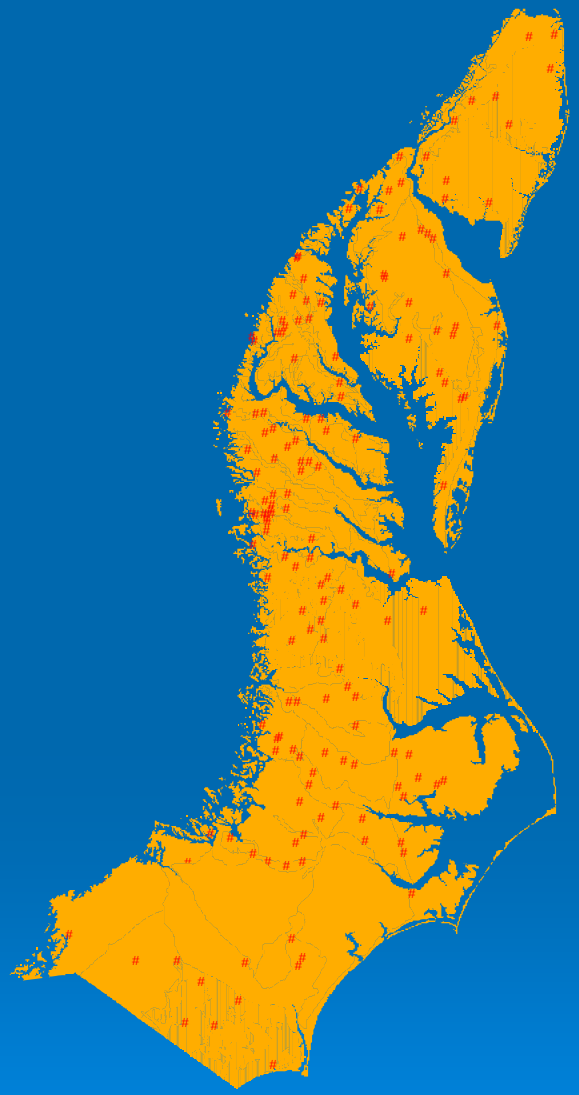
The WSA found 28% of streams in good condition, compared to least-disturbed reference condition.

Across the US 25-30% of streams have high levels of nutrients or excess sedimentation. These streams are twice as likely to have poor biology.

Integrated Monitoring and Assessment

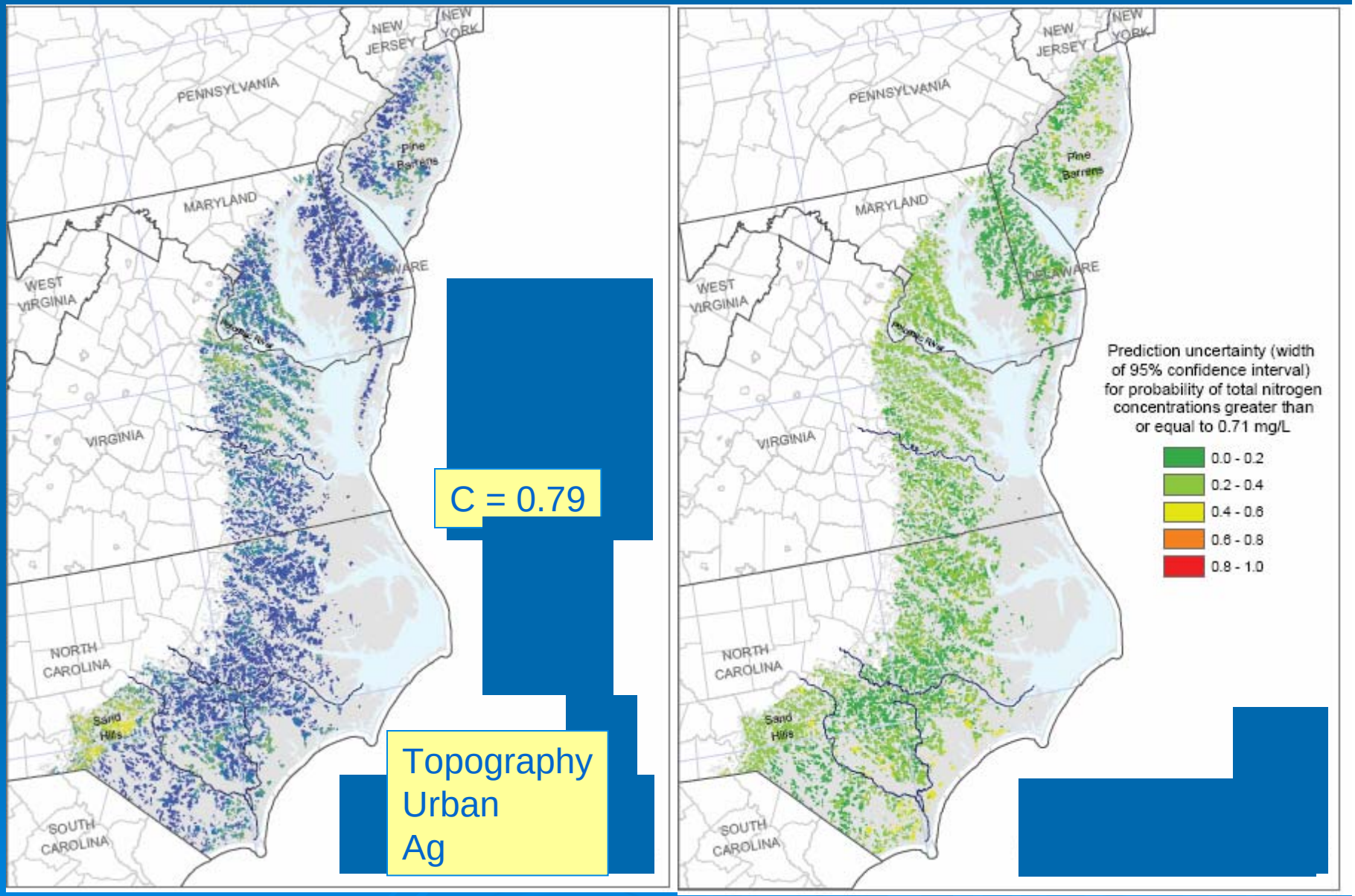


Landscape Indicators for Pesticides and Nutrients

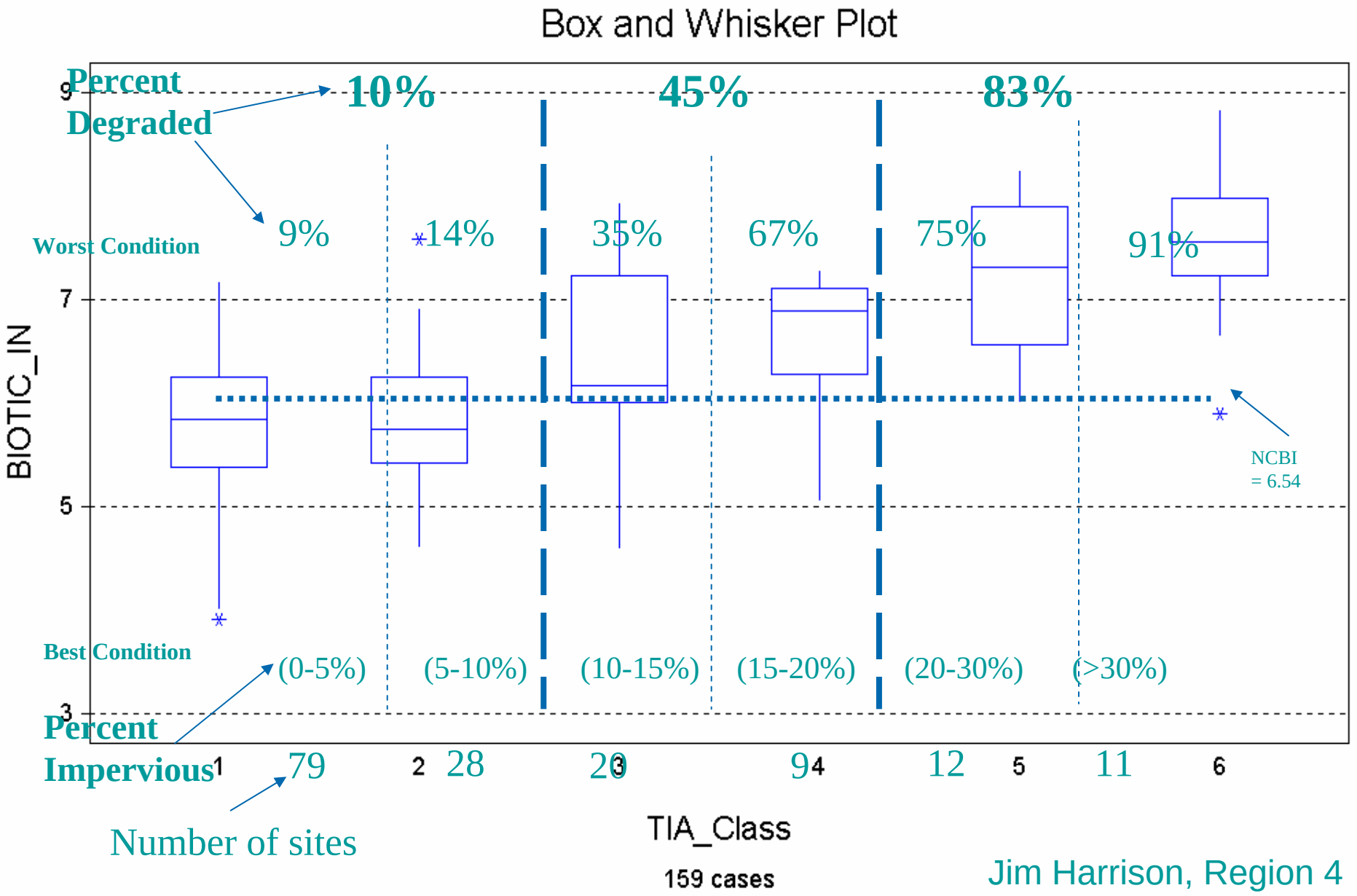


- Random design, stratified across land use gradient
- One-time sampling during base flow index period
- Watershed size varied from 0.2 km^2 to 14.1 km^2
- Benthos – EMAP 300 count, species level identification
- Water – NAWQA program, collection, sampling, and analysis procedures

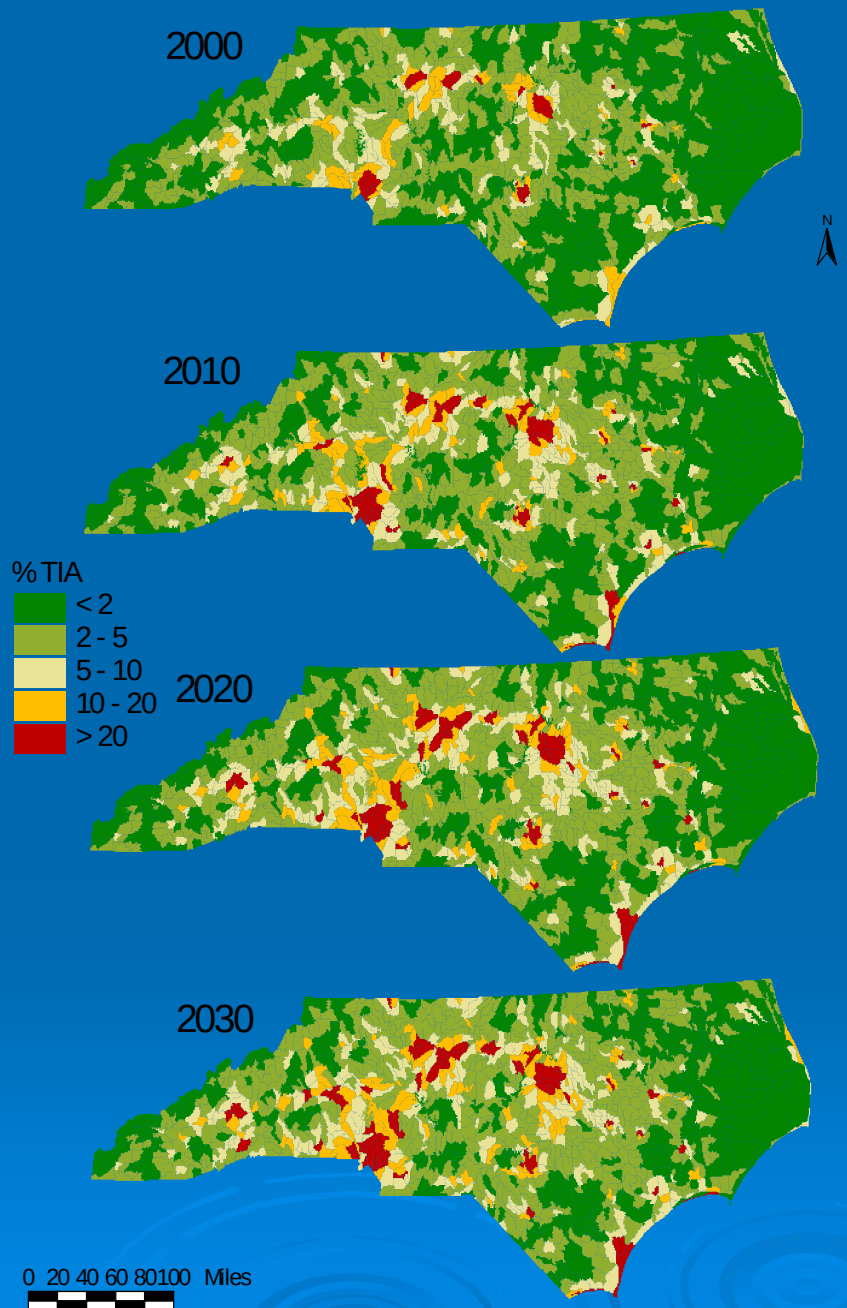
Anne Neale, ORD


NEW JERSEY
NEW YORK
PENNSYLVANIA
Pine Barrens
MARYLAND
DELAWARE
WEST VIRGINIA
VIRGINIA
NORTH CAROLINA
Sand Hills
SOUTH CAROLINA
C = 0.79
Topography
Urban
Ag
Prediction uncertainty (width of 95% confidence interval) for probability of total nitrogen concentrations greater than or equal to 0.71 mg/L
0.0 - 0.2
0.2 - 0.4
0.4 - 0.6
0.6 - 0.8
0.8 - 1.0

Percent Degraded vs. Total Impervious Area



Jim Harrison, Region 4



U.S. Environmental Protection Agency Athens, Georgia November 2004

Budget Initiative for Monitoring: Two Components

- **Enhance State and Tribal monitoring programs by providing new funds to States and Tribes to develop and implement monitoring strategies**
  - Enhance access to and use of data
  - Integrate tools to support more efficient use of monitoring resources in support of decision needs
- **Assess the condition of all of the Nation's waters and changes over time**
  - Create partnership among federal/State agencies and others to cost-effectively survey the Nation's waters
  - Provide information, with documented confidence, on the extent of water quality problems and key stressors across the country to support decision making

Allocation of Monitoring Initiative

- **Provide States, Tribes and Interstates $9.8M in 106 grant for improved monitoring programs**
  - Provide each State ~$170,000 annually for program enhancements outlined in state monitoring strategies
  - Continue to provide tribal and interstate set-aside
- **Provide States and Tribes $8.4M in 106 grant to participate in statistically-valid surveys of the Nation's waters**
  - $8000 per site for regional/national scale survey in lower 48
  - $400K set aside to build survey capacity in AK, HI, trust territories

Activities Funded with 106 Survey Funds

- Primary activities covered
  - Site reconnaissance
  - Field sample collection
  - Laboratory analysis
- Additional activities as resources permit:
  - Participation in national/regional meetings and conference calls on design, implementation, analysis and reporting
  - Participation in review and feedback on draft materials

Options for Using 106 Survey Funds

- States and tribes may request 106 funds for full implementation of survey
- States and tribes may request EPA provide in-kind services for some or all of the survey work in lieu of direct funding
  - Provides flexibility to balance short term workload demands
  - Provides greater efficiency in laboratory processing

Purpose of National Water Resource Surveys

- **Report on the condition of waters of the U.S.**
  - Report on core indicators with regional supplements
  - Standardized or comparable methods
  - Unbiased estimate of condition based on representative subset of waters
- **Provide information on key questions:**
  - To what extent do waters support healthy ecosystems, recreation?
  - Extent of resource affected by key water quality problems/stressors?
  - Is water quality improving?
  - Are we spending pollution control dollars wisely?

Opportunities to Leverage National Surveys

- **Provide data to support CWA programs nationally**
  - Develop and enhance Water Quality Standards, *e.g.*, support criteria guidelines
  - Develop predictive tools, *e.g.*, SPARROW, LIPS
  - Develop diagnostic tools, *e.g.*, CADDIS
- **Support State water quality programs**
  - Use State- or finer-scale surveys to generate cost-effective assessment of 100% of State's waters
  - Develop predictive tools at State scale to identify vulnerable waters
  - Develop State water quality criteria and assessment tools

Goals of Partnership for Surveys

- Report on the condition of the Nation's waters, with documented confidence, at regional and national scales, with option for State-scale estimates
- Promote collaboration across jurisdictional and organizational boundaries in the assessment of water quality
- Enhance State and Tribal capacity for monitoring and assessment